

=> file reg
FILE 'REGISTRY' ENTERED AT 16:20:06 ON 04 NOV 2005
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2005 American Chemical Society (ACS)

=> d his

FILE 'LREGISTRY' ENTERED AT 15:56:20 ON 04 NOV 2005
L1 STR

FILE 'REGISTRY' ENTERED AT 16:14:16 ON 04 NOV 2005
L2 1 S L1
L3 9 S L1 FUL
SAV L3 SAN519/A

FILE 'CAOLD' ENTERED AT 16:17:04 ON 04 NOV 2005
L4 0 S L3

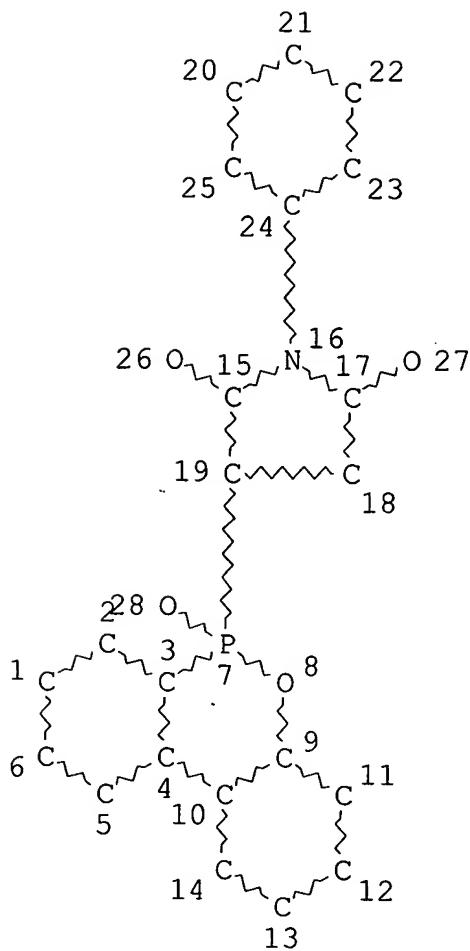
FILE 'ZCAPLUS' ENTERED AT 16:17:09 ON 04 NOV 2005
L5 3 S L3

FILE 'BEILSTEIN' ENTERED AT 16:17:18 ON 04 NOV 2005
L6 0 S L1
L7 0 S L1 FUL

FILE 'MARPAT' ENTERED AT 16:17:41 ON 04 NOV 2005
L8 0 S L3
L9 3 S L3 FUL
SAV L9 SAN519A/A

FILE 'REGISTRY' ENTERED AT 16:20:06 ON 04 NOV 2005

=> d l3 que stat
L1 STR



NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 28

STEREO ATTRIBUTES: NONE

L3 9 SEA FILE=REGISTRY SSS FUL L1

100.0% PROCESSED 112 ITERATIONS
SEARCH TIME: 00.00.01

9 ANSWERS

=> file zcaplus
FILE 'ZCAPLUS' ENTERED AT 16:20:21 ON 04 NOV 2005
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2005 AMERICAN CHEMICAL SOCIETY (ACS)

=> d 15 1-3 all hitstr

L5 ANSWER 1 OF 3 ZCAPLUS COPYRIGHT 2005 ACS on STN
AN 2005:179209 ZCAPLUS
DN 142:241353
ED Entered STN: 03 Mar 2005
TI Succinimide group-containing phosphaphhenanthrenes and fire-resistant
polymers using them
IN Liu, Ying-Lin; Chien, Yi-Chuan
PA Szu-Li Chong Ruan University, Taiwan
SO Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C07F009-6574
ICS C08K005-5313; C08L101-00; C09K021-12; C09K021-14
CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 29

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005053857	A2	20050303	JP 2003-287741	20030806

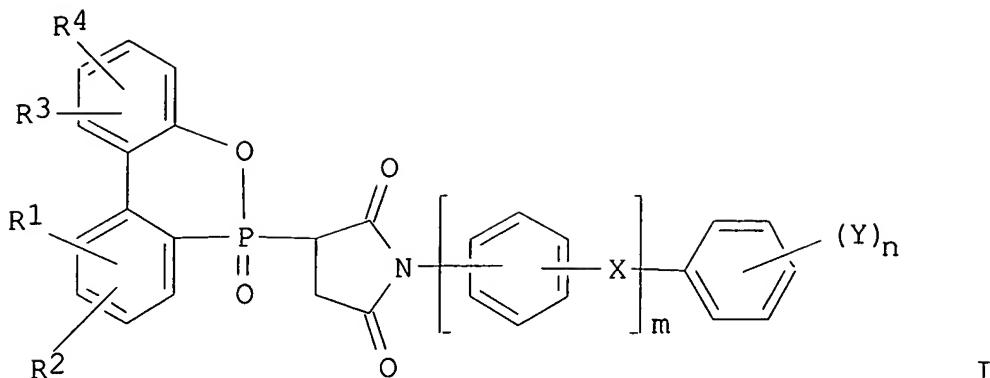
PRAI JP 2003-287741 20030806

CLASS

	PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2005053857	JP 2005053857	ICM	C07F009-6574
		ICS	C08K005-5313; C08L101-00; C09K021-12; C09K021-14
JP 2005053857	JP 2005053857	FTERM	4H028/AA40; 4H028/AA48; 4H050/AA01; 4H050/AA03; 4H050/AB48; 4J002/AA001; 4J002/BB031; 4J002/BB121; 4J002/BC031; 4J002/BD031; 4J002/BD131; 4J002/BG061; 4J002/BN151; 4J002/CB001; 4J002/CC011; 4J002/CC041; 4J002/CC181; 4J002/CC211; 4J002/CD051; 4J002/CF051; 4J002/CF071; 4J002/CF211; 4J002/CG001; 4J002/CH001; 4J002/CH071; 4J002/CL001; 4J002/CP001; 4J002/EW136; 4J002/FD13

OS MARPAT 142:241353

GI

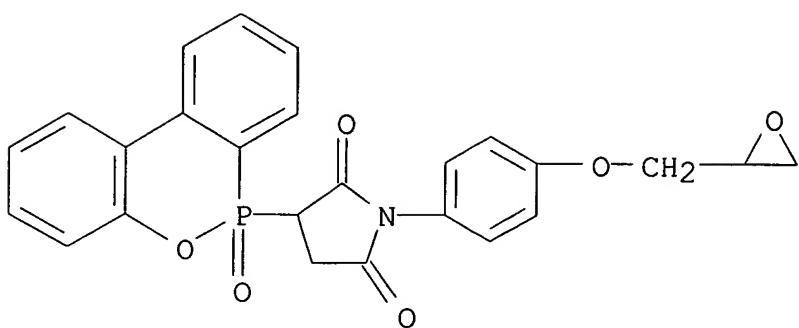


- AB The polymers are manufd. by mixing or reaction of P compds. I (R1-R4 = H, C1-4 alkyl; X = bond, CH₂, CMe₂, O, S, SO₂, CO₂, O₂C; Y = H, C1-4 alkyl, OH, NH₂, NO₂, CO₂H, CHO, glycidyloxy; m = 0-2; n = 1-4) with polymers or compds. Thus, 9,10-dihydro-9-oxa-10-phosphaphhenanthrene 10-oxide was treated with 4-maleimidophenol and etherified with epichlorohydrin to give I (R1-R4 = H, m = 0, n = 1, Y = glycidyloxy), which was mixed with BE 188 (bisphenol A epoxy resin) to give a fire-resistant resin.
- ST phosphaphhenanthrene succinimide fireproofing epoxy resin;
maleimidophenol phosphaphhenanthrene adduct fireproofing polymer
- IT Fire-resistant materials
Fireproofing agents
(manuf. of succinimide group-contg. phosphaphhenanthrenes as fireproofing agents for polymers)
- IT Epoxy resins, preparation
Polyamides, preparation
(manuf. of succinimide group-contg. phosphaphhenanthrenes as fireproofing agents for polymers)
- IT Polycarbonates, uses
(manuf. of succinimide group-contg. phosphaphhenanthrenes as fireproofing agents for polymers)
- IT Polyesters, uses
(manuf. of succinimide group-contg. phosphaphhenanthrenes as fireproofing agents for polymers)
- IT Polyoxyphenylenes
(manuf. of succinimide group-contg. phosphaphhenanthrenes as fireproofing agents for polymers)
- IT 26062-94-2, Poly(butylene terephthalate)
(assumed monomers; manuf. of succinimide group-contg.

phosphaphenanthrenes as fireproofing agents for polymers)
IT 824933-50-8P 824933-51-9P 824933-52-0P
824933-53-1P
(manuf. of succinimide group-contg. phosphaphenanthrenes as
fireproofing agents for polymers)
IT 155016-26-5P
(manuf. of succinimide group-contg. phosphaphenanthrenes as
fireproofing agents for polymers)
IT 824933-47-3P
(manuf. of succinimide group-contg. phosphaphenanthrenes as
fireproofing agents for polymers)
IT 824933-48-4P 824933-49-5P
(manuf. of succinimide group-contg. phosphaphenanthrenes as
fireproofing agents for polymers)
IT 9003-53-6, Polystyrene 9003-56-9, ABS resin 24968-12-5,
Poly(butylene terephthalate) 25038-59-9, uses
(manuf. of succinimide group-contg. phosphaphenanthrenes as
fireproofing agents for polymers)
IT 106-89-8, Epichlorohydrin, reactions 941-69-5, N-Phenylmaleimide
7300-91-6, 4-Maleimidophenol 35948-25-5, 9,10-Dihydro-9-oxa-10-
phosphaphhenanthrene 10-oxide 55738-70-0, 3-Maleimido-1,5-
benzenedicarboxylic acid
(manuf. of succinimide group-contg. phosphaphenanthrenes as
fireproofing agents for polymers)
IT 824933-50-8P 824933-51-9P 824933-52-0P
824933-53-1P
(manuf. of succinimide group-contg. phosphaphenanthrenes as
fireproofing agents for polymers)
RN 824933-50-8 ZCAPLUS
CN 2,5-Pyrrolidinedione, 3-(6-oxido-6H-dibenzo[c,e][1,2]oxaphosphorin-6-
yl)-1-[4-(oxiranylmethoxy)phenyl]-, polymer with
(chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol] (9CI)
(CA INDEX NAME)

CM 1

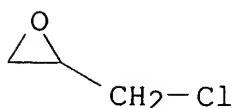
CRN 824933-49-5
CMF C25 H20 N O6 P



CM 2

CRN 106-89-8

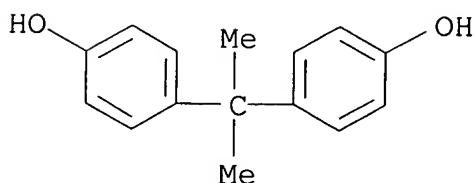
CMF C3 H5 Cl O



CM 3

CRN 80-05-7

CMF C15 H16 O2



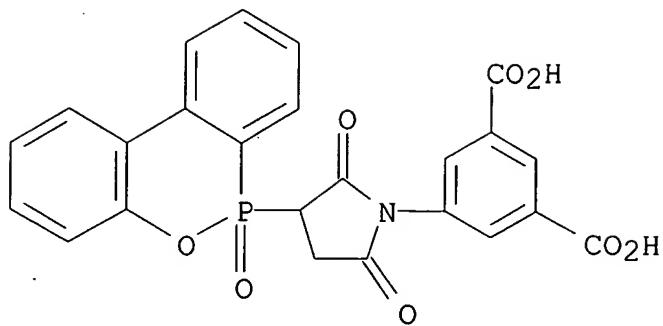
RN 824933-51-9 ZCAPLUS

CN 1,3-Benzenedicarboxylic acid, 5-[3-(6-oxido-6H-dibenzo[c,e][1,2]oxaphosphorin-6-yl)-2,5-dioxo-1-pyrrolidinyl]-, polymer with (chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol] (9CI) (CA INDEX NAME)

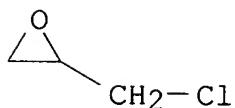
CM 1

CRN 824933-48-4

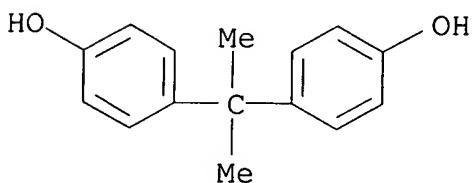
CMF C24 H16 N 08 P



CM 2

CRN 106-89-8
CMF C3 H5 Cl O

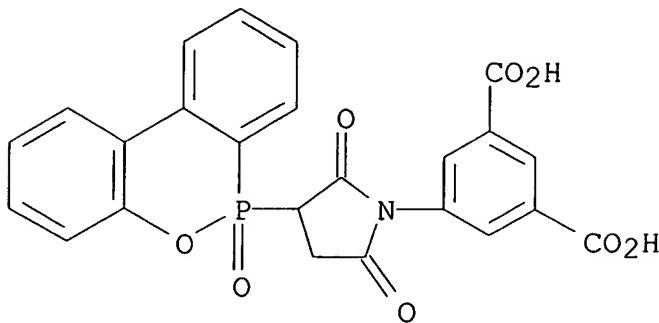
CM 3

CRN 80-05-7
CMF C15 H16 O2

RN 824933-52-0 ZCPLUS
 CN 1,3-Benzenedicarboxylic acid, 5-[3-(6-oxido-6H-dibenzo[c,e][1,2]oxaphosphorin-6-yl)-2,5-dioxo-1-pyrrolidinyl]-, polymer with 4,4'-methylenebis[benzenamine] (9CI) (CA INDEX NAME)

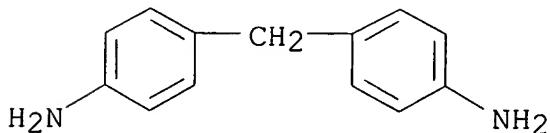
CM 1

CRN 824933-48-4
 CMF C24 H16 N 08 P



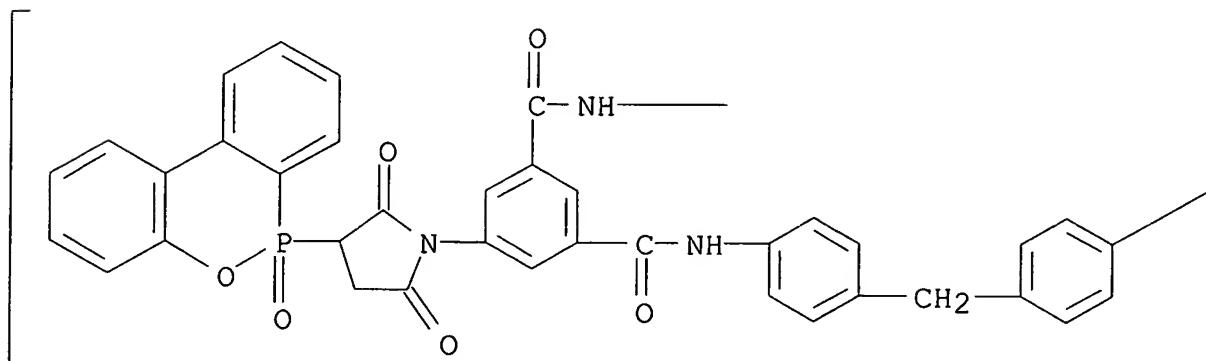
CM 2

CRN 101-77-9
 CMF C13 H14 N2



RN 824933-53-1 ZCAPLUS
 CN Poly[iminocarbonyl[5-[3-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)-2,5-dioxo-1-pyrrolidinyl]-1,3-phenylene]carbonylimino-1,4-phenylenemethylene-1,4-phenylene] (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

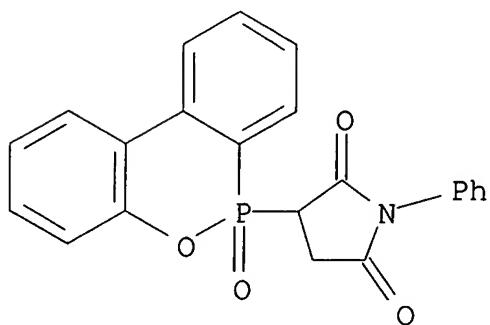
] n

IT **155016-26-5P**

(manuf. of succinimide group-contg. phosphaphhenanthrenes as fireproofing agents for polymers)

RN 155016-26-5 ZCPLUS

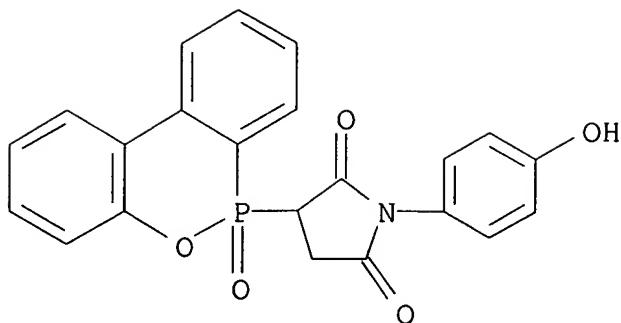
CN 2,5-Pyrrolidinedione, 3-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)-1-phenyl- (9CI) (CA INDEX NAME)

IT **824933-47-3P**

(manuf. of succinimide group-contg. phosphaphhenanthrenes as fireproofing agents for polymers)

RN 824933-47-3 ZCPLUS

CN 2,5-Pyrrolidinedione, 1-(4-hydroxyphenyl)-3-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)- (9CI) (CA INDEX NAME)

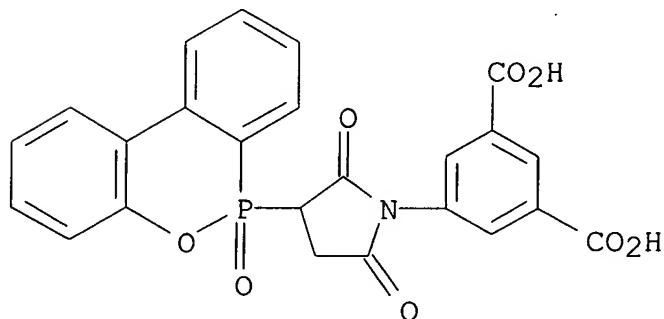


IT **824933-48-4P 824933-49-5P**

(manuf. of succinimide group-contg. phosphaphhenanthrenes as fireproofing agents for polymers)

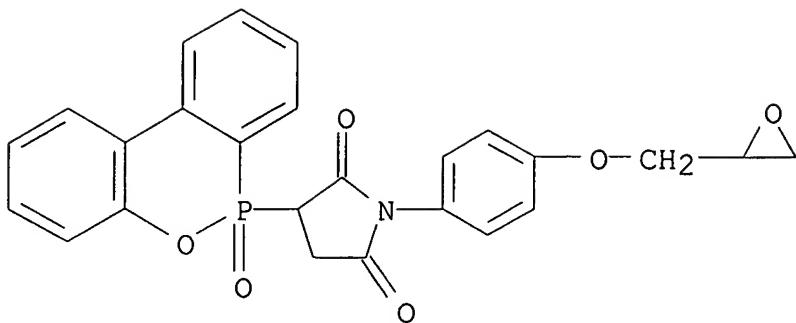
RN 824933-48-4 ZCAPLUS

CN 1,3-Benzenedicarboxylic acid, 5-[3-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)-2,5-dioxo-1-pyrrolidinyl]- (9CI)
(CA INDEX NAME)



RN 824933-49-5 ZCAPLUS

CN 2,5-Pyrrolidinedione, 3-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)-1-[4-(oxiranylmethoxy)phenyl]- (9CI) (CA INDEX NAME)



L5 ANSWER 2 OF 3 ZCPLUS COPYRIGHT 2005 ACS on STN
 AN 2005:59996 ZCPLUS
 DN 142:135660
 ED Entered STN: 21 Jan 2005
 TI Phosphorus-containing compound for use as flame retardant and flame retardant resin
 IN Liu, Ying-ling; Chiu, Yie-chan
 PA Chung Yuan Christian University, Taiwan
 SO U.S. Pat. Appl. Publ., 5 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 IC ICM C09K021-00
 ICS C08K005-34; C08K005-49
 INCL 524104000; 252609000; 524116000
 CC 37-6 (Plastics Manufacture and Processing)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2005014873	A1	20050120	US 2003-621519	20030718

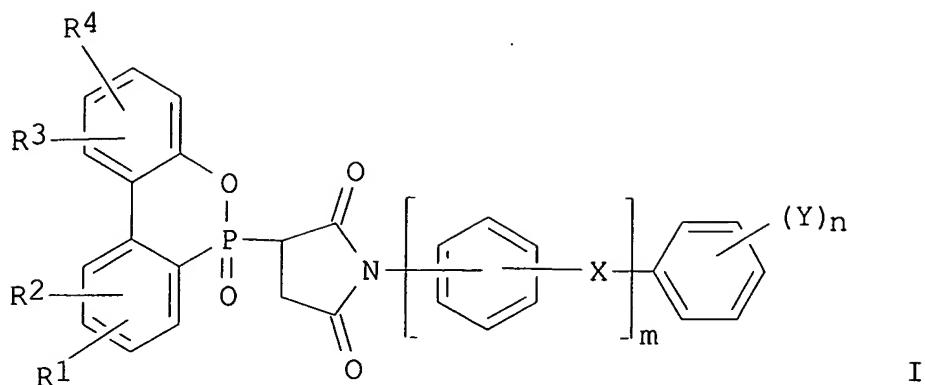
PRAI US 2003-621519 20030718

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2005014873	ICM	C09K021-00
	ICS	C08K005-34; C08K005-49
	INCL	524104000; 252609000; 524116000
US 2005014873	NCL	524/104.000
	ECLA	C09K021/12

OS MARPAT 142:135660

GI



- AB A phosphorus contg. compd. I is disclosed, which can be blended a resin or reacted with a compd. to form a flame retardant resin: wherein R1-R4 independently are H or C1-C4 alkyl; X is a single bond, -CH2-, -C(CH₃)₂-, -COO-, -OCO-, -O-, -S-, -SO₂ -; Y is H, C1-C4 alkyl, -OH, -NH₂, -NO₂, -COOH, -CHO, or -OCH₂CHOCH₂; m is integer of 0-2; and n is an integer of 1-4. Thus, 3-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)-1-phenyl-2,5-pyrrolidinedione was prep'd. by reacting 9,10-dihydro-9-oxa-10-phosphaphhenanthren-10-oxide with N-Ph maleimide at 180.degree..
- ST phosphorus compd flame retardant resin
- IT Fire-resistant materials
Fireproofing agents
(phosphorus-contg. compd. for use as flame retardant and flame retardant resin)
- IT Polycarbonates, uses
Polyesters, uses
Polyoxyphenylenes
(phosphorus-contg. compd. for use as flame retardant and flame retardant resin)
- IT Epoxy resins, preparation
Polyamides, preparation
(phosphorus-contg.; phosphorus-contg. compd. for use as flame retardant and flame retardant resin)
- IT 26062-94-2
(assumed monomers; phosphorus-contg. compd. for use as flame retardant and flame retardant resin)
- IT 155016-26-5P 824933-47-3P 824933-48-4P
824933-49-5P 824933-50-8P 824933-51-9P
824933-52-0P 824933-53-1P
(phosphorus-contg. compd. for use as flame retardant and flame

retardant resin)

IT 9003-53-6, Polystyrene 9003-56-9, ABS 24968-12-5, PBT
 25038-59-9, PET polymer, uses
 (phosphorus-contg. compd. for use as flame retardant and flame
 retardant resin)

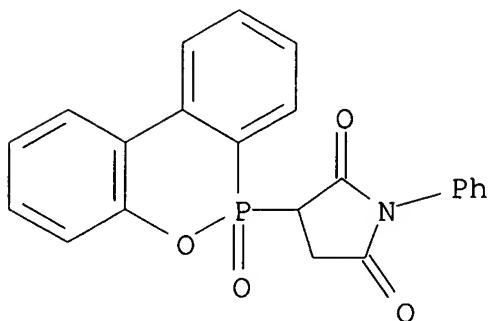
IT 7300-91-6, 4-Maleimidophenol 55738-70-0, 3-Maleimido-1,5-benzoic
 diacid
 (phosphorus-contg. compd. for use as flame retardant and flame
 retardant resin)

IT 106-89-8, Epichlorohydrin, reactions 941-69-5, N-Phenyl maleimide
 35948-25-5, 9,10-Dihydro-9-oxa-10-phosphaphhenanthren-10-oxide
 (staring material; phosphorus-contg. compd. for use as flame
 retardant and flame retardant resin)

IT **155016-26-5P 824933-47-3P 824933-48-4P**
824933-49-5P 824933-50-8P 824933-51-9P
824933-52-0P 824933-53-1P
 (phosphorus-contg. compd. for use as flame retardant and flame
 retardant resin)

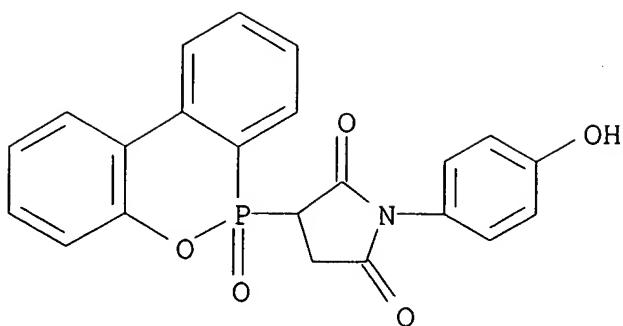
RN 155016-26-5 ZCPLUS

CN 2,5-Pyrrolidinedione, 3-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)-1-phenyl- (9CI) (CA INDEX NAME)



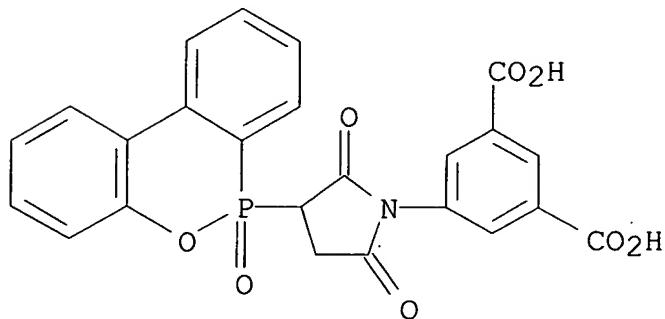
RN 824933-47-3 ZCPLUS

CN 2,5-Pyrrolidinedione, 1-(4-hydroxyphenyl)-3-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)- (9CI) (CA INDEX NAME)



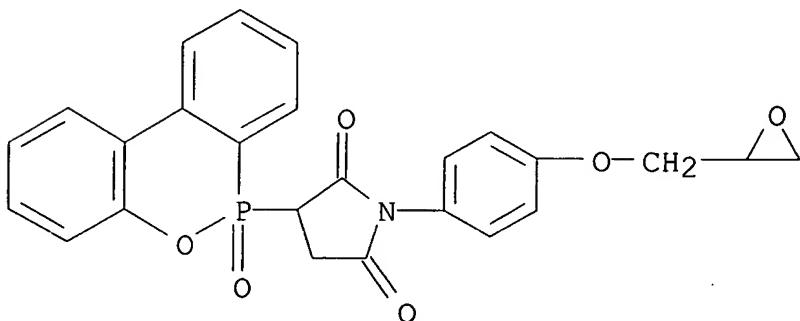
RN 824933-48-4 ZCPLUS

CN 1,3-Benzenedicarboxylic acid, 5-[3-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)-2,5-dioxo-1-pyrrolidinyl]- (9CI) (CA INDEX NAME)



RN 824933-49-5 ZCPLUS

CN 2,5-Pyrrolidinedione, 3-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)-1-[4-(oxiranylmethoxy)phenyl]- (9CI) (CA INDEX NAME)



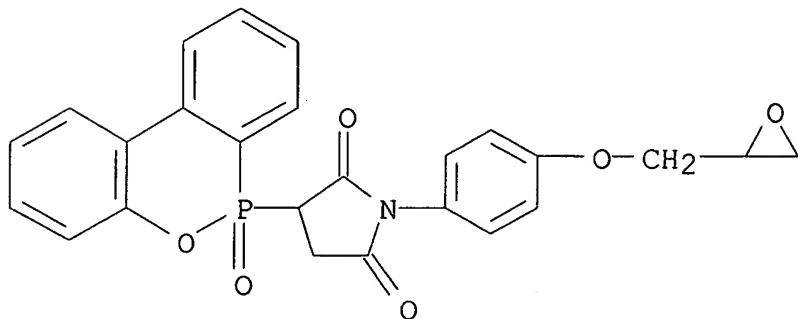
RN 824933-50-8 ZCPLUS

CN 2,5-Pyrrolidinedione, 3-(6-oxido-6H-dibenzo[c,e][1,2]oxaphosphorin-6-yl)-1-[4-(oxiranylmethoxy)phenyl]-, polymer with (chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol] (9CI) (CA INDEX NAME)

CM 1

CRN 824933-49-5

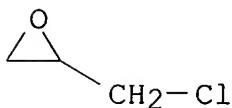
CMF C25 H20 N O6 P



CM 2

CRN 106-89-8

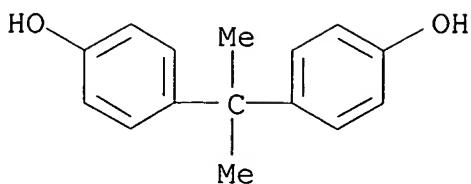
CMF C3 H5 Cl O



CM 3

CRN 80-05-7

CMF C15 H16 O2



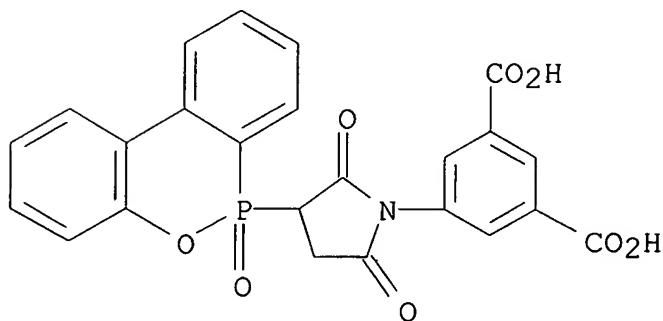
RN 824933-51-9 ZCPLUS

CN 1,3-Benzenedicarboxylic acid, 5-[3-(6-oxido-6H-dibenzo[c,e][1,2]oxaphosphorin-6-yl)-2,5-dioxo-1-pyrrolidinyl]-, polymer with (chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol] (9CI) (CA INDEX NAME)

CM 1

CRN 824933-48-4

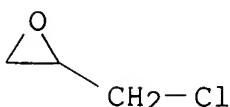
CMF C24 H16 N O8 P



CM 2

CRN 106-89-8

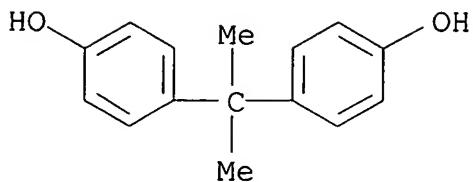
CMF C3 H5 Cl O



CM 3

CRN 80-05-7

CMF C15 H16 O2



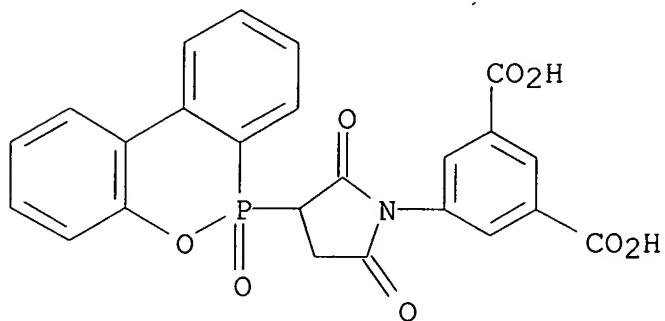
RN 824933-52-0 ZCPLUS

CN 1,3-Benzenedicarboxylic acid, 5-[3-(6-oxido-6H-dibenzo[c,e][1,2]oxaphosphorin-6-yl)-2,5-dioxo-1-pyrrolidinyl]-, polymer with 4,4'-methylenebis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 824933-48-4

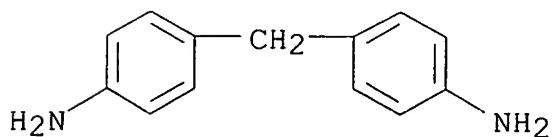
CMF C24 H16 N 08 P



CM 2

CRN 101-77-9

CMF C13 H14 N2

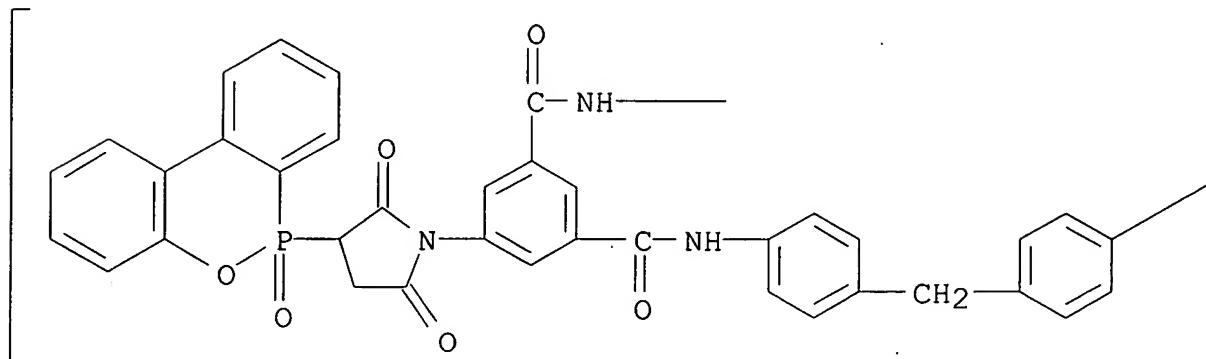


RN 824933-53-1 ZCPLUS

CN Poly[iminocarbonyl[5-[3-(6-oxido-6H-dibenzo[c,e][1,2]oxaphosphorin-6-

yl)-2,5-dioxo-1-pyrrolidinyl]-1,3-phenylene]carbonylimino-1,4-phenylenemethylene-1,4-phenylene] (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

[
]
n

L5 ANSWER 3 OF 3 ZCPLUS COPYRIGHT 2005 ACS on STN
 AN 1994:300239 ZCPLUS
 DN 120:300239
 ED Entered STN: 11 Jun 1994
 TI Phosphorus-containing succinimide derivatives and their manufacture
 and uses as fireproofing agents
 IN Saito, Toranosuke; Takaguchi, Masayuki; Fujioka, Shinzo
 PA Sanko Kaihatsu Kagaku Kenk, Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM C07F009-6584
 ICS C08K005-5313; C09K021-12

CC 37-6 (Plastics Manufacture and Processing)
 Section cross-reference(s): 27, 28, 29

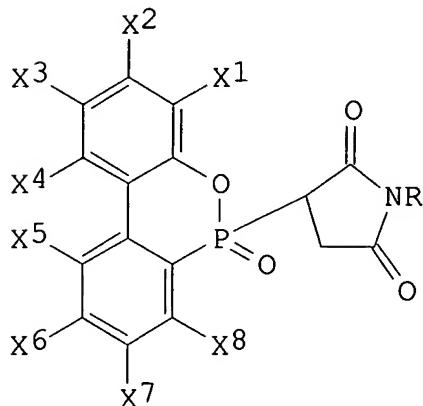
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 05301883	A2	19931116	JP 1992-129570	199204 22

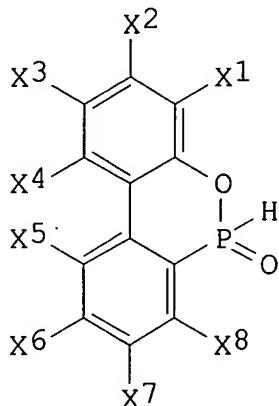
PRAI JP 1992-129570 19920422

CLASS

	PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP	05301883	ICM	C07F009-6584
		ICS	C08K005-5313; C09K021-12
OS	MARPAT 120:300239		
GI			



I



II

AB Title compds. I (R = alkyl, cycloalkyl, aryl; X1-8 = H, alkyl, cycloalkyl, aryl, alkylaryl) are manufd. by reacting II with maleimides. Thus, II (X1-8 = H) was heated with cyclohexyl maleimide at .apprx.150.degree. and then heated at 180-190.degree. to give I (R = cyclohexyl, X1-8 = H). A mixt. of TR 1400BH (PET) 94, Irganox 0.1, and I 6 parts showed good fire resistance and reduced amt. of harmful gases when burned.

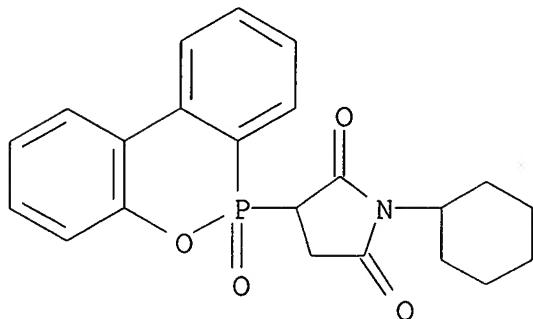
ST phosphorus contg succinimide fireproofing plastic; addn dihydrooxaphosphaphenanthrene oxide maleimide

IT Fireproofing agents
 (phosphorus-contg. succinimides, for polymers)

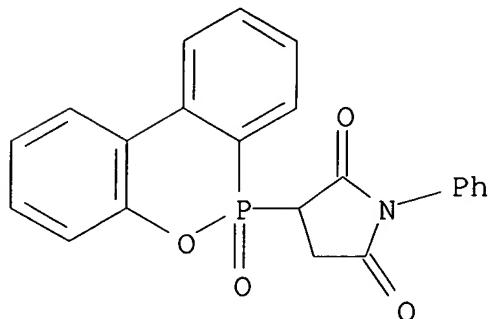
IT 25038-59-9, Poly(ethylene terephthalate), miscellaneous
 (fireproofing agents for, phosphorus-contg. succinimides as)

IT 155016-25-4P 155016-26-5P

(prep. of, fireproofing agents for polymers)
IT 941-69-5 1631-25-0, N-Cyclohexylmaleimide
(reaction of, with dihydrooxaphosphaphenanthrene oxide)
IT 35948-25-5
(reaction of, with maleimides)
IT 155016-25-4P 155016-26-5P
(prepn. of, fireproofing agents for polymers)
RN 155016-25-4 ZCPLUS
CN 2,5-Pyrrolidinedione, 1-cyclohexyl-3-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)- (9CI) (CA INDEX NAME)



RN 155016-26-5 ZCPLUS
CN 2,5-Pyrrolidinedione, 3-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)-1-phenyl- (9CI) (CA INDEX NAME)



=> file beilstein.
FILE 'BEILSTEIN' ENTERED AT 16:20:58 ON 04 NOV 2005
COPYRIGHT (c) 2005 Beilstein-Institut zur Förderung der Chemischen Wissenschaften

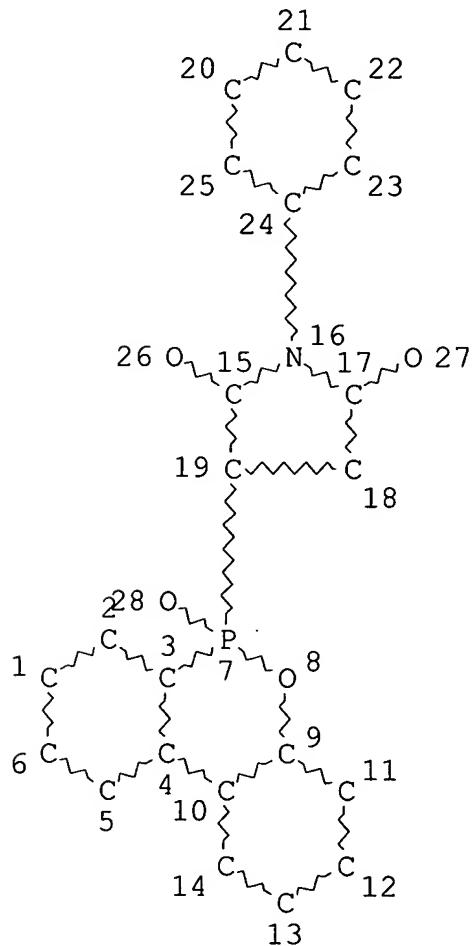
licensed to Beilstein GmbH and MDL Information Systems GmbH

FILE LAST UPDATED ON OCTOBER 10, 2005

FILE COVERS 1771 TO 2005.

*** FILE CONTAINS 9,363,954 SUBSTANCES ***

=> => .d 17 que stat
L1 STR



NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 28

STEREO ATTRIBUTES: NONE

L7 0 SEA FILE=BEILSTEIN SSS FUL L1

100.0% PROCESSED 1 ITERATIONS

SEARCH TIME: 00.00.05

0 ANSWERS

=> file marpat

FILE 'MARPAT' ENTERED AT 16:22:29 ON 04 NOV 2005

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

COPYRIGHT (C) 2005 American Chemical Society (ACS)

FILE CONTENT: 1988-PRESENT (VOL 143 ISS 18) (20051028/ED)

MOST RECENT CITATIONS FOR PATENTS FROM FIVE MAJOR ISSUING AGENCIES
(COVERAGE TO THESE DATES IS NOT COMPLETE):

US 6924313 02 AUG 2005

DE 1020040544 04 AUG 2005

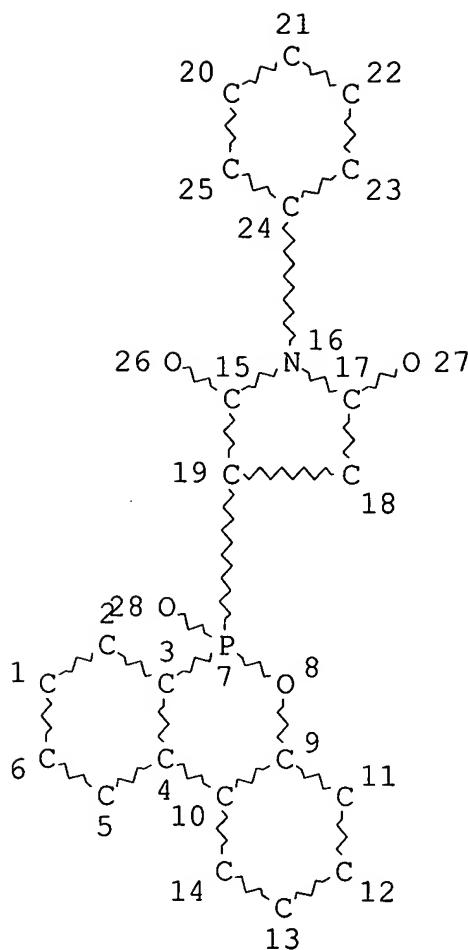
EP 1568694 31 AUG 2005

JP 2005213127 11 AUG 2005

WO 2005090358 29 SEP 2005

=> d 19 que stat

L1 STR



NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 28

STEREO ATTRIBUTES: NONE

L9 3 SEA FILE=MARPAT SSS FUL L1

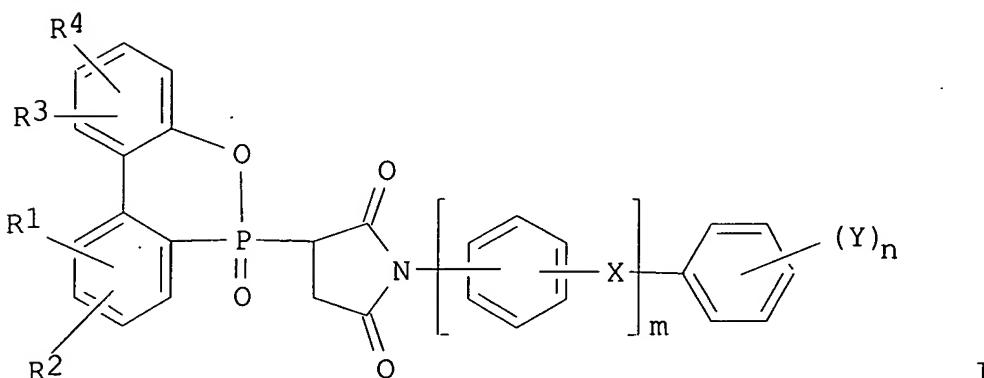
100.0% PROCESSED 5 ITERATIONS
SEARCH TIME: 00.00.01

3 ANSWERS

=> d 19 1-3 cbib abs hit

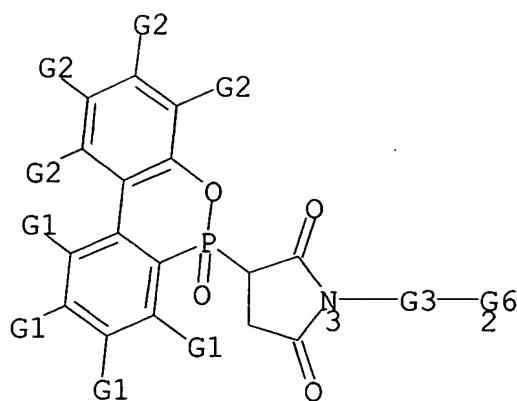
L9 ANSWER 1 OF 3 MARPAT COPYRIGHT 2005 ACS on STN
 142:241353 Succinimide group-containing phosphaphhenanthrenes and
 fire-resistant polymers using them. Liu, Ying-Lin; Chien, Yi-Chuan
 (Szu-Li Chong Ruan University, Taiwan). Jpn. Kokai Tokkyo Koho JP
 2005053857 A2 20050303, 15 pp. (Japanese). CODEN: JKXXAF.
 APPLICATION: JP 2003-287741 20030806.

GI

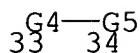


AB The polymers are manufd. by mixing or reaction of P compds. I (R1-R4 = H, C1-4 alkyl; X = bond, CH₂, CMe₂, O, S, SO₂, CO₂, O₂C; Y = H, C1-4 alkyl, OH, NH₂, NO₂, CO₂H, CHO, glycidyloxy; m = 0-2; n = 1-4) with polymers or compds. Thus, 9,10-dihydro-9-oxa-10-phosphaphhenanthrene 10-oxide was treated with 4-maleimidophenol and etherified with epichlorohydrin to give I (R1-R4 = H, m = 0, n = 1, Y = glycidyloxy), which was mixed with BE 188 (bisphenol A epoxy resin) to give a fire-resistant resin.

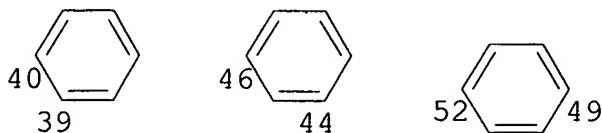
MSTR 1



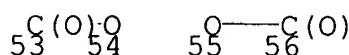
G1 = 2 or more H / alkyl <containing 1-4 C> /
 cycloalkyl <containing 3-4 C>
 G2 = 2 or more H / alkyl <containing 1-4 C> /
 cycloalkyl <containing 3-4 C>
 G3 = (0-2) 33-3 34-2



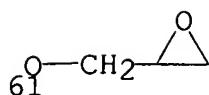
G4 = 40-3 39-34 / 46-3 44-34 / 52-3 49-34



G5 = bond / CH₂ / CMe₂ / O / S / SO₂ / 53-33 54-2 /
55-33 56-2



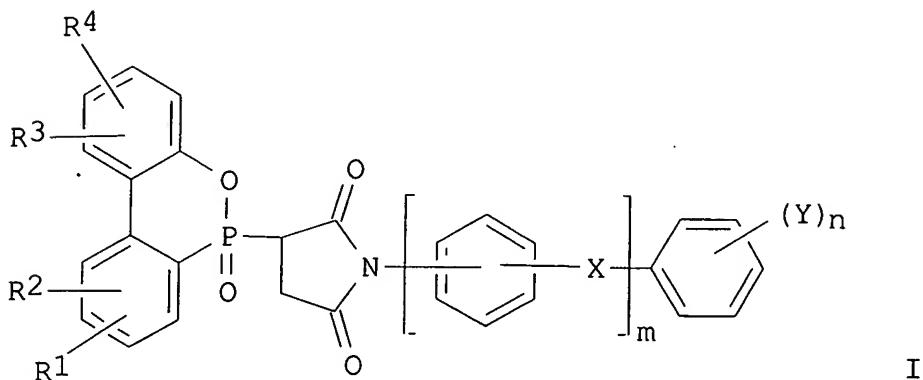
G6 = Ph (opt. substd. by (up to 4) G7)
 G7 = alkyl <containing 1-4 C> /
 cycloalkyl <containing 3-4 C> / OH / NH₂ / NO₂ / CO₂H / CHO /
 61



Patent location: claim 1

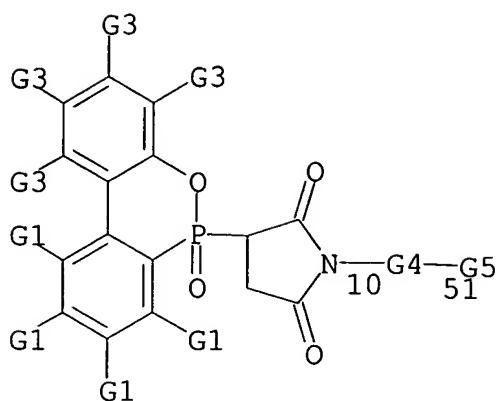
L9 ANSWER 2 OF 3 MARPAT COPYRIGHT 2005 ACS on STN
 142:135660 Phosphorus-containing compound for use as flame retardant and flame retardant resin. Liu, Ying-ling; Chiu, Yie-chan (Chung Yuan Christian University, Taiwan). U.S. Pat. Appl. Publ. US 2005014873 A1, 20050120, 5 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-621519 20030718.

GI



AB A phosphorus contg. compd. I is disclosed, which can be blended a resin or reacted with a compd. to form a flame retardant resin: wherein R1-R4 independently are H or C1-C4 alkyl; X is a single bond, -CH₂-, -C(CH₃)₂-, -COO-, -OCO-, -O-, -S-, -SO₂-, Y is H, C1-C4 alkyl, -OH, -NH₂, -NO₂, -COOH, -CHO, or -OCH₂CHOCH₂; m is integer of 0-2; and n is an integer of 1-4. Thus, 3-(6-oxido-6H-dibenz[c,e][1,2]oxaphosphorin-6-yl)-1-phenyl-2,5-pyrrolidinedione was prep'd. by reacting 9,10-dihydro-9-oxa-10-phosphaphenanthren-10-oxide with N-Ph maleimide at 180.degree..

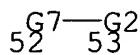
MSTR 1



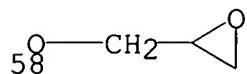
G1 = 2 or more H / alkyl <containing 1-4 C>
 G2 = CH₂ / CMe₂ / C(O) / 54-52 55-51 / 56-52 57-51 /
 O / S / SO₂ / bond



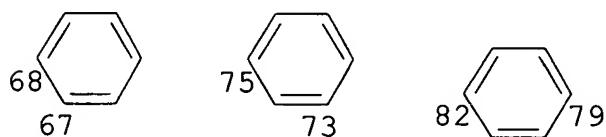
G3 = 2 or more H / alkyl <containing 1-4 C>
 G4 = (0-2) 52-10 53-51



G5 = Ph (opt. substd. by (1-4) G6)
 G6 = alkyl <containing 1-4 C> / OH / NH₂ / NO₂ / CO₂H /
 CHO / 58



G7 = 68-10 67-53 / 75-10 73-53 / 82-10 79-53



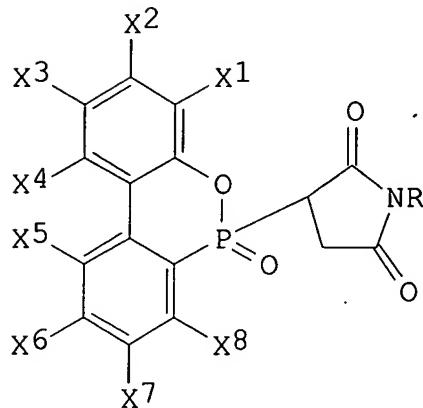
Patent location:

claim 1

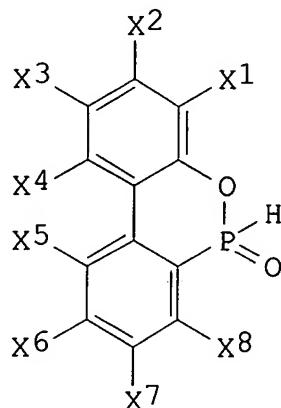
L9 ANSWER 3 OF 3 MARPAT COPYRIGHT 2005 ACS on STN

120:300239 Phosphorus-containing succinimide derivatives and their manufacture and uses as fireproofing agents. Saito, Toranosuke; Takaguchi, Masayuki; Fujioka, Shinzo (Sanko Kaihatsu Kagaku Kenk, Japan). Jpn. Kokai Tokkyo Koho JP 05301883 A2 19931116 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1992-129570 19920422.

GI



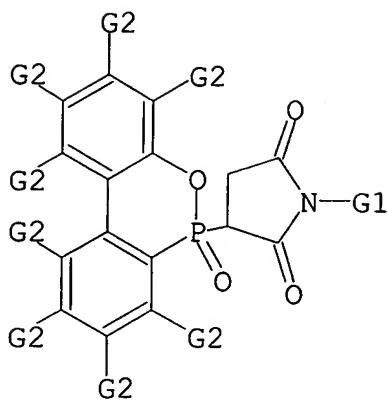
I



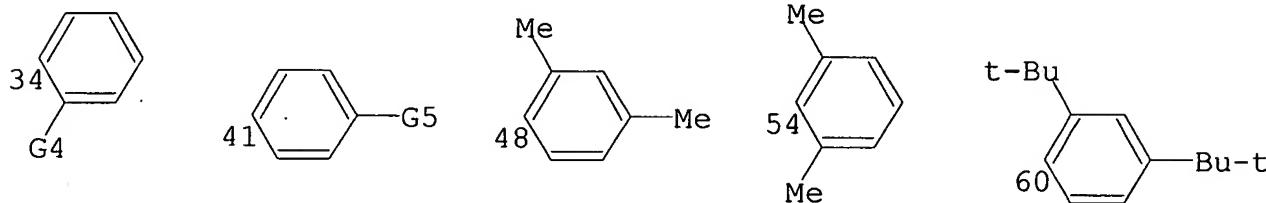
II

AB Title compds. I ($R = \text{alkyl, cycloalkyl, aryl}$; $X1-8 = H, \text{alkyl, cycloalkyl, aryl, alkylaryl}$) are manufd. by reacting II with maleimides. Thus, II ($X1-8 = H$) was heated with cyclohexyl maleimide at .apprx.150.degree. and then heated at 180-190.degree. to give I ($R = \text{cyclohexyl}$, $X1-8 = H$). A mixt. of TR 1400BH (PET) 94, Irganox 0.1, and I 6 parts showed good fire resistance and reduced amt. of harmful gases when burned.

MSTR 1



G1 = alkyl (opt. substd.) / cycloalkyl (opt. substd.) / aryl (opt. substd.) / (**Examples:** Ph / 34 / 41 / 48 / 54 / 60)



G2 = H / alkyl (opt. substd.) / cycloalkyl (opt. substd.) / aryl (opt. substd. by G3)

G3 = alkyl (opt. substd.) / R

G4 = Me / Cl / Bu-t

G5 = Me / Cl / Bu-t

Patent location: claim 1